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(54) Title: PRODUCTION PROCESS OF GAMMA-CYHALOTHRIN

(57) Abstract: A process for the preparation of gamma-cyhalothrin comprising a) chlorinating 1R *cis*-Z 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl cyclopropanecarboxylic acid to give 1R *cis*-Z 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl cyclopropanecarboxylic acid chloride; b) esterifying 1R *cis*-Z 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl cyclopropanecarboxylic acid chloride with 3-phenoxy benzaldehyde in the presence of a source of cyanide to form a diastereoisomeric mixture of cyhalothrin isomers and c) epimerising the diastereoisomeric mixture under conditions in which the least soluble diastereoisomer crystallises from solution.

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C07C253/08 C07C255/39

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BEILSTEIN Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                   | Relevant to claim No. |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y          | GB 2 000 764 A (ICI LTD)<br>17 January 1979 (1979-01-17)<br>cited in the application                                                                                                                                 | 1-4                   |
| X          | page 1, line 28 - line 42; table I<br>page 3, line 1 - page 4, line 39; claims<br>3,11,12,14,15; examples 6,7                                                                                                        | 5                     |
| Y          | US 3 835 176 A (MATSUO T ET AL)<br>10 September 1974 (1974-09-10)<br>column 1, line 4 - line 43<br>column 2, line 41 - line 64<br>column 3, line 49 - line 56<br>column 3, line 65 - column 4, line 20;<br>example 4 | 1-4                   |

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☒ Further documents are listed in the continuation of box C.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                          | Relevant to claim No. |
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| Y          | US 4 183 948 A (HUFF ROGER K)<br>15 January 1980 (1980-01-15)<br>column 2, line 38 - line 49; claims<br>1,6,14; examples 18,19; table I<br>-----                                                                                                                                                                                            | 1-4                   |
| Y          | BENTLEY P D ET AL: "FLUORINATED ANALOGUES<br>OF CHRYSANTHEMIC ACID"<br>PESTICIDE SCIENCE, ELSEVIER APPLIED<br>SCIENCE PUBLISHER. BARKING, GB,<br>vol. 11, no. 2, 1980, pages 156-164,<br>XP001104810<br>ISSN: 0031-613X<br>cited in the application<br>structure (XIX) and related preparation<br>method provided on pages 163-164<br>----- | 1-4                   |
| X          | EP 0 106 469 A (ICI PLC)<br>25 April 1984 (1984-04-25)<br>page 1, line 1 - line 11<br>page 1, line 28 - page 2, line 15<br>page 2, line 23 - page 3, line 20<br>page 5, line 23 - line 32; claims 1-9;<br>examples 1,3,4<br>-----                                                                                                           | 5                     |

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